

INDUSTRIAL AIR COOLED  
 SCROLL CHILLER  
 PACKAGES  
 MODEL SCOD



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*Smartwise Innovations...  
 Towards Green, Quality & Reliability Solutions*



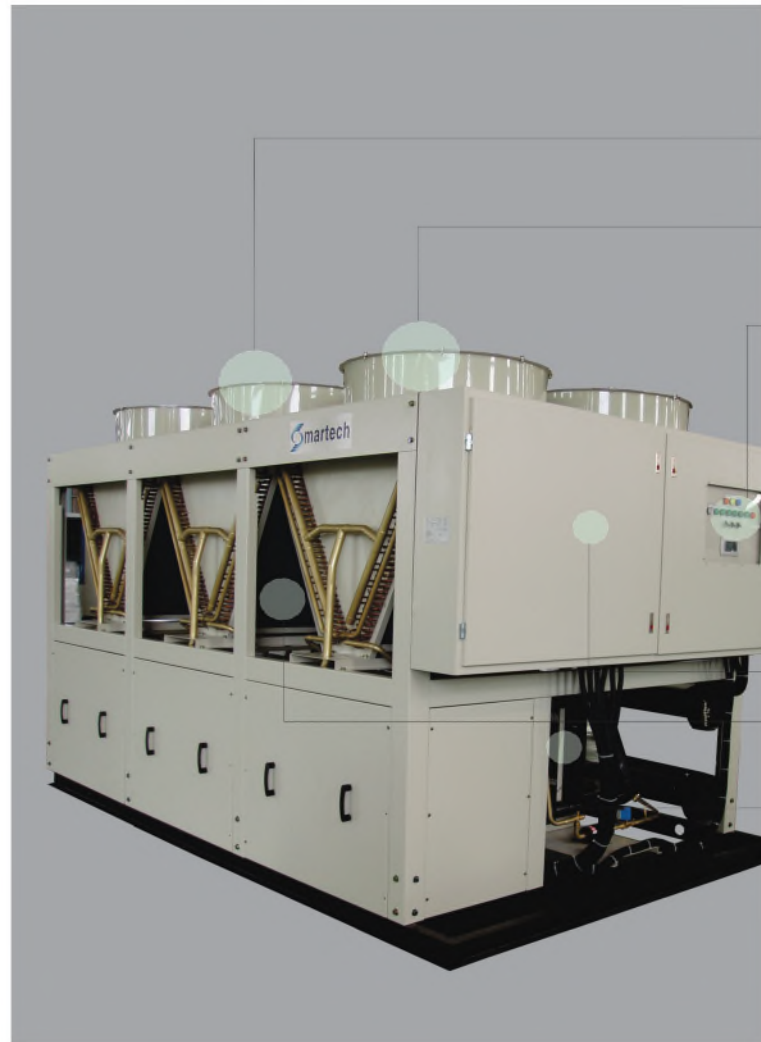
SCOD\_A SERIES



## INTRODUCTION

This series of Multiple Scroll Compressor Air Cooled Package Chillers were developed by a group of industry engineers, each of them with over 20 years of experience in the design, manufacturing, installation and service of electric chillers, packaged air conditioners, split air-conditioners, fan-coils, handling units, and related products.

- Smartech is fully committed to innovative design, new and advance technology, value engineering and to provide expert personalized service to architects, consulting engineers, developers, building owners and contractors.
- Our ability and courage to utilize and adopt latest technology, combined with fullest personalized assistance, has enabled the company to provide architects, consultants and developers various customized solutions to their various demanding application requirements.
- Smartech has the unique expertise and experience to custom design and fabricates equipment for installations in marine and corrosive environment, explosive and hazardous environment, low noise environment and any other special application needs.
- All units meet or exceed ASHRAE 90.1 minimum energy efficiency requirements.
- Units meet UL electrical requirements.
- Only used with ECO-FRIENDLY HFC type refrigerants.



SUPER LOW SOUND AXIAL CONDENSER FANS

DIRECT DRIVE TEAO FAN MOTORS

FACTORY PACKAGED AND PRE-WIRED POWER AND CONTROL PANEL  
 SMART-ADVANCE SA600 NON-PROPRIETARY MICROPROCESSOR BASED CONTROLLER

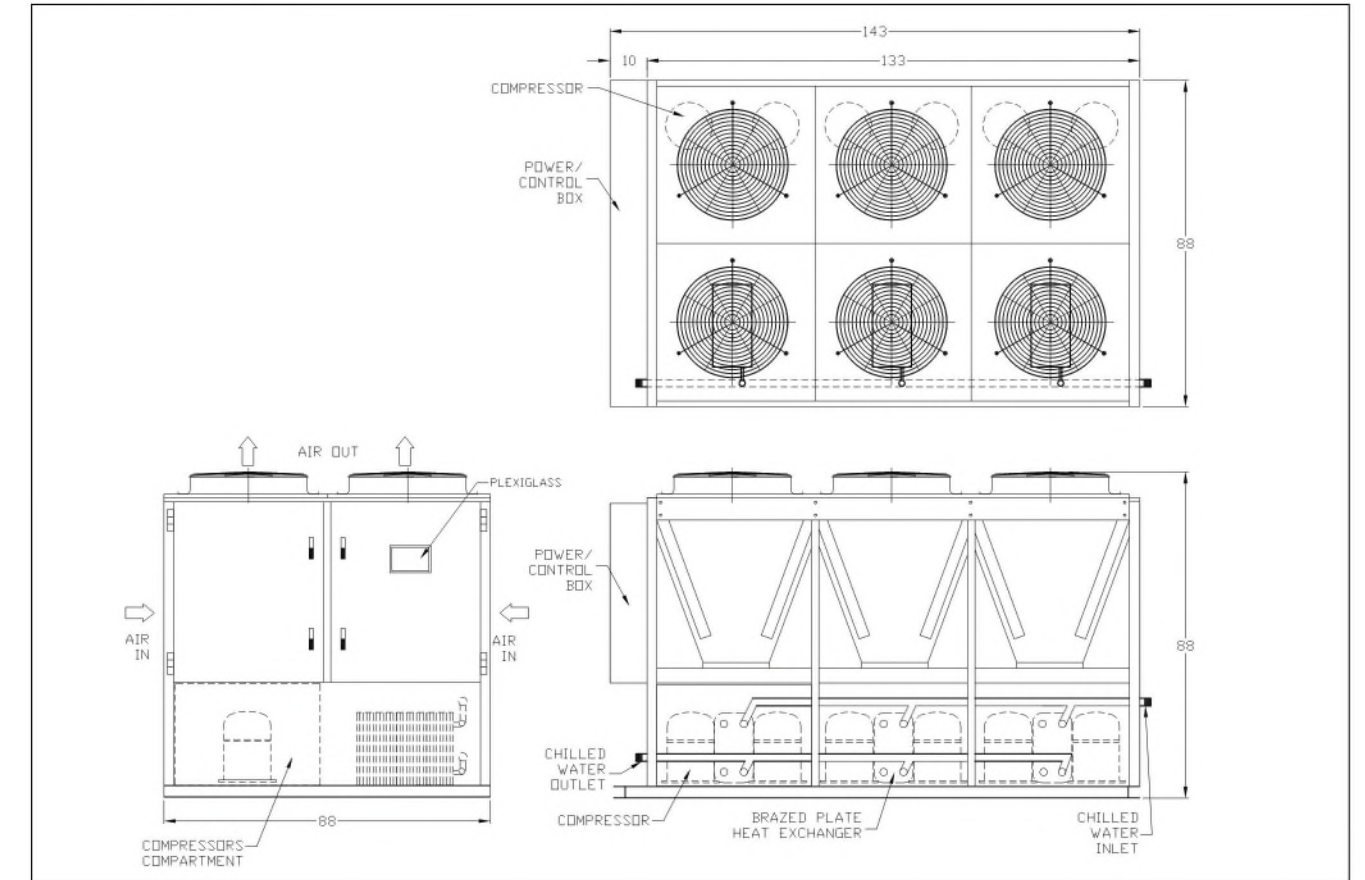
WEATHER PROOF CASING

HYDROPHILIC COATED, 0.06" THICK CONDENSER FIN STOCK. MINIMUM 14 FINS PER INCH FIN SPACING.

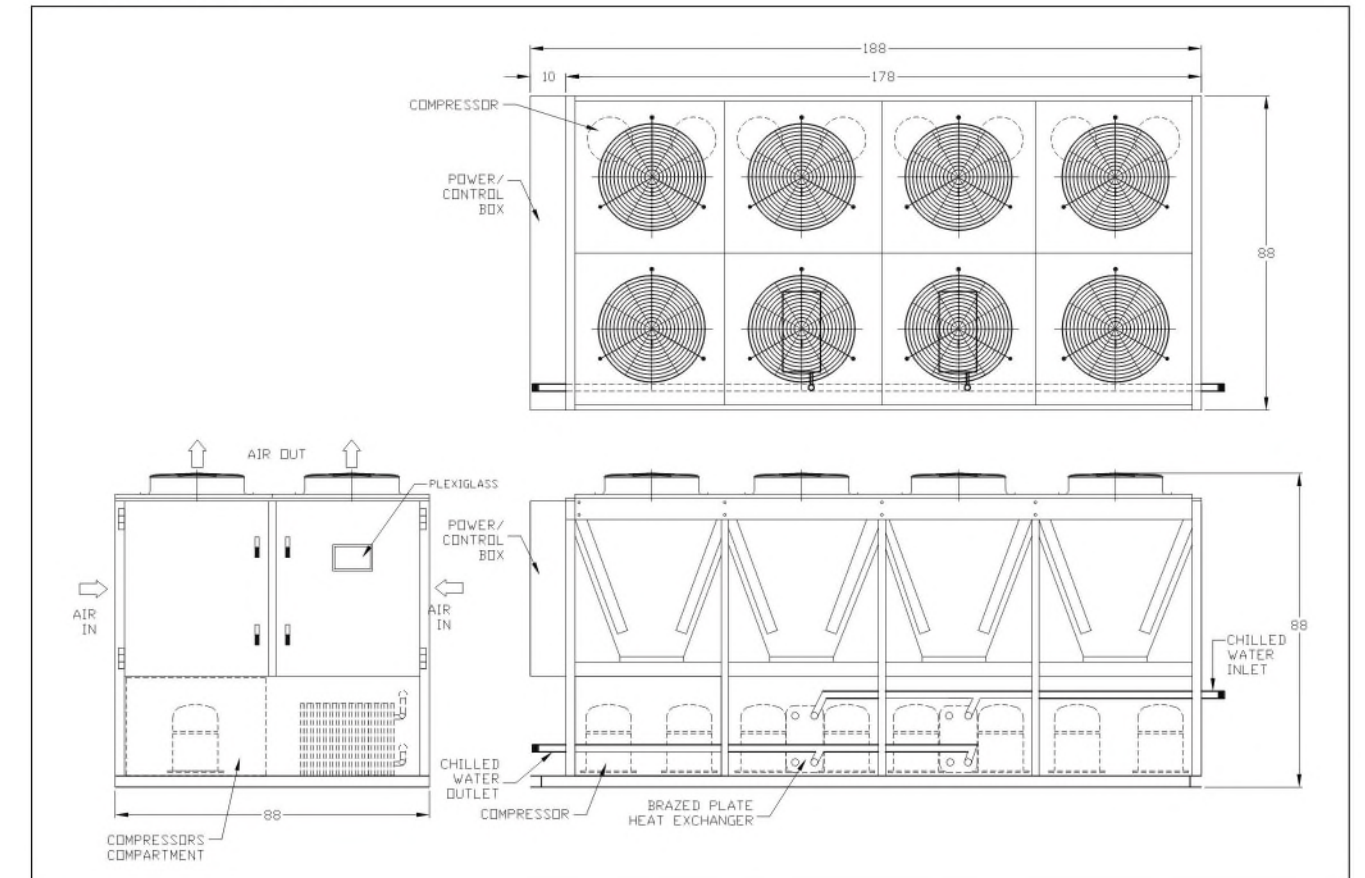
HERMETIC SCROLL COMPRESSOR

## DIMENSION DATA

SCOD 66-6, 72-6, 85-6



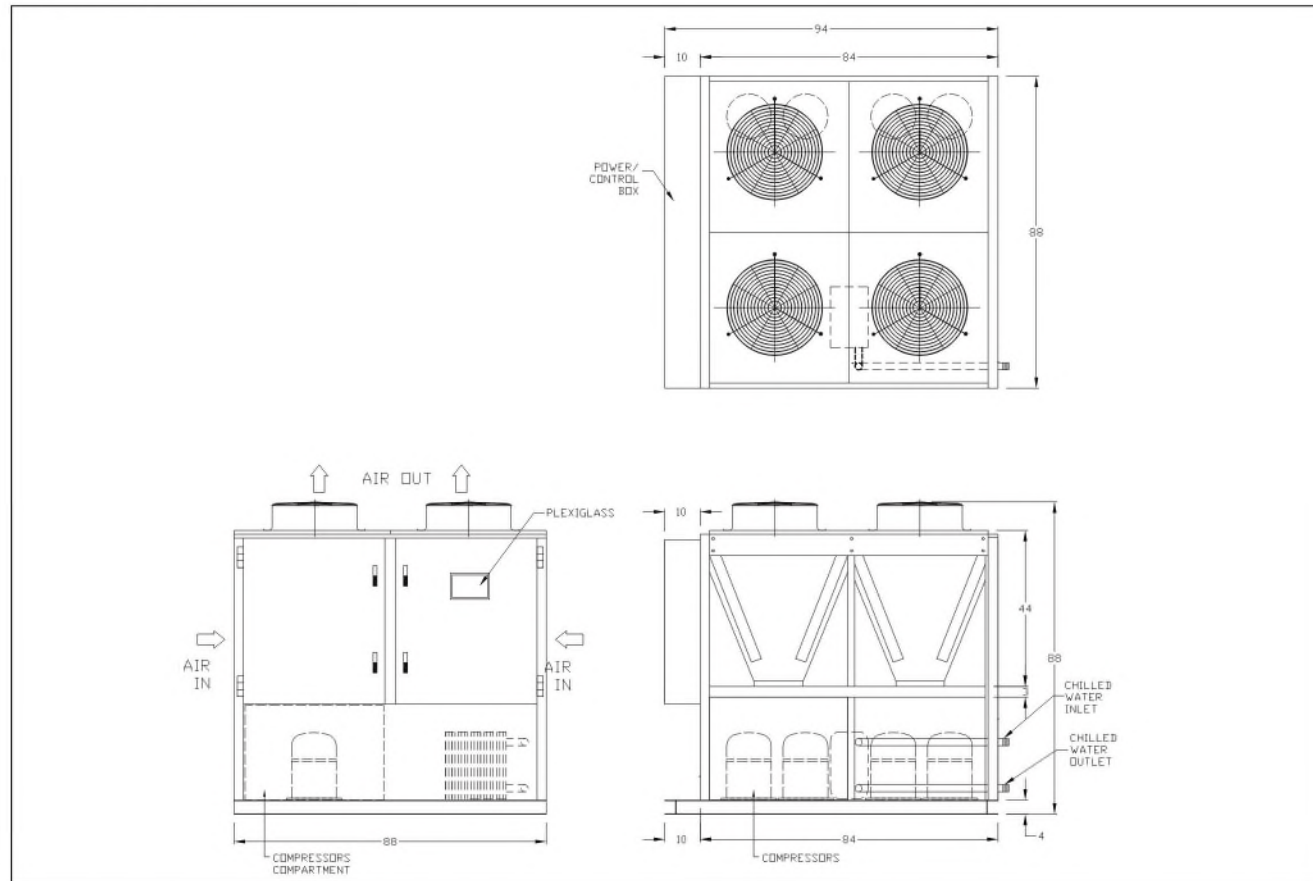
SCOD 90-6, 96-6, 115-6



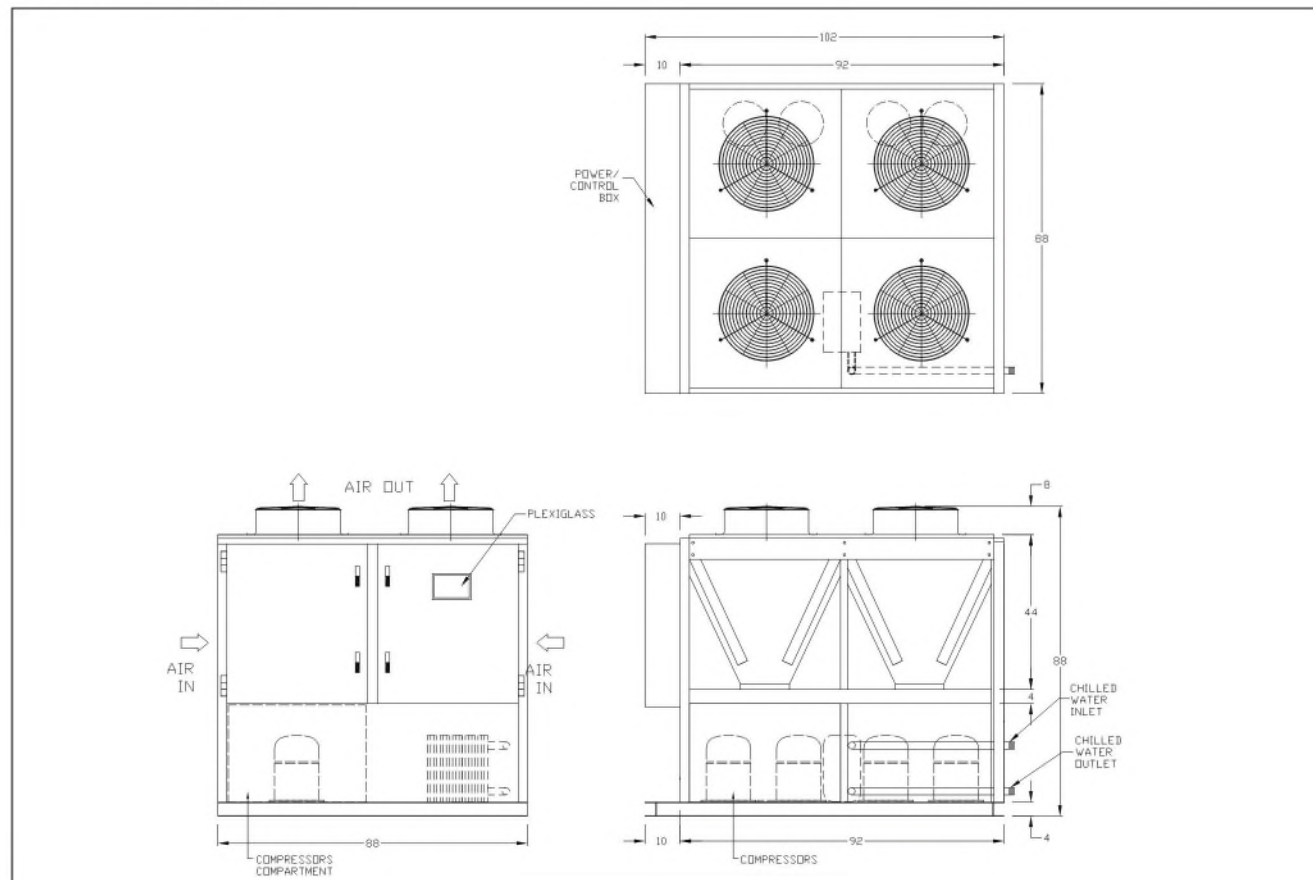
- Note:
- 1) All dimensions are in inches.
  - 2) No tandem and shell & tubes options available.

## DIMENSION DATA

### SCOD 35-6, 40-6



### SCOD 45-6, 50-6, 60-6



Note:  
 1) All dimensions are in inches.  
 2) No tandem and shell & tubes options available.

## AIR COOLED SCROLL CHILLERS

### GENERAL DESCRIPTION

The Air Cooled Scroll Chillers are designed and manufactured to ensure efficient and reliable performance and to provide an economical system of air conditioning for residential, commercial and industrial buildings. The air-cooled scroll chillers can also be suitable piped and connected to provide chilled water or cold brine solution for process cooling purpose. Each air-cooled scroll chiller consists of an outdoor weatherproof casing constructed from heavy gauge galvanized steel coated with oven-baked epoxy polyester paint; two or multiple scroll compressors with minimum two independent refrigerant circuits; a large surface area Copper tubes-Aluminium fins condenser coil for efficient heat transfer; a compact Brazed Plates Heat Exchanger used as cooler; two or multiple axial propeller fans with direct drive inductions motors; factory packaged and prewired power and control panel; and a microprocessorbased controller for capacity steps modulation and safety protections. The air-cooled scroll chillers are suitable for outdoor installation with free and unducted condenser fans air discharge. For chillers over model size SCOD66, shell and tubes type coolers, each with independent either 3 or 4 refrigerant circuit and single water side circuit are offered as options.

### Nomenclature

SCOD	72	6	A	R7
SMARTECH Chiller Scroll Compressor DX Evaporator	Nominal Cooling Tons	6 = 60Hz 5 = 50Hz	Air Cooled Type	R7 = R407C R4 = R410A

### Applications Served

#### Industrial Process Cooling

Although the term industrial lends one to think tough & rugged, industrial process applications can actually be quite sensitive. Many of these applications need tight temperature control to maintain their quality of product. We, at Smartech understand these needs and realize that your process is your lifeblood. Accurate temperature control and 24/7 reliability are our top priorities. This list show some common process cooling applications:

- Plastics processing
- Injection mold cooling
- Extrusion cooling
- Laser cooling
- Welding machine cooling
- Metal die-casting cooling
- Metal plating / anodizing cooling
- Engine dynamometer testing cooling
- Dry cleaning cooling
- Oil cooling

#### Food Processing Cooling

Food processing can be some of the most critical cooling applications due to their use of meats & poultry. In dealing with food, in general, temperature control is paramount. If your chiller does not hold temperature, you lose product. We have experience in the various food processing cooling applications and can help you find a solution to yours. Here are just a few applications we have handled previously:

- Bakery cooling
- Batch cooling
- Brine / Marinade cooling
- Vacuum meat tumbler / massager cooling
- Winery cooling
- Brewery cooling
- Ice cream / Slushy machine cooling

#### Medical & Laboratory Cooling

Medical equipment is a high dollar investment. It deserves to be cooled by a dependable, specially designed chiller. Our chillers provide proven reliability to sustain operation and prevent damage from overheating. Several applications are listed below:

- M.R.I cooling
- Clean room air conditioning
- C.A.T. Scan cooling
- P.E.T Scan cooling
- Lab testing

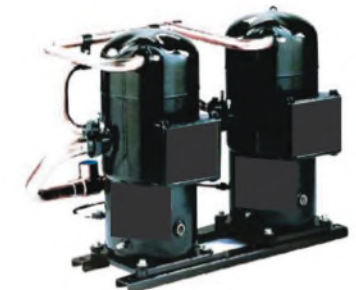
#### Specialty applications

Have a special or custom application? No problem. Custom chiller applications are where we thrive. We are here to help. Some previous custom projects are:

- Ice Rink cooling
- Explosion proof chillers for all electrical area classifications
- Stainless steel frame, cabinet and control panel construction
- Ultra Low Sound requirement.

#### Standard options available to meet any customer requirement:

- Single compressor, per circuit options without the use of tandem compressors
- Installed insulated stainless steel tanks from 50 - 2000 gallons
- Hydronic pump packages with process pumping and recirculating pump options
- Nema 4 flow switch or flow meters
- Alarm beacon with audible horn
- Waterside pressure relief bypass valve
- Process fluid inline separator
- Process fluid inline filter
- Extended compressor warranty
- Custom color paint to match any international color code
- High and low ambient operations options
- Low temperature options available



## MECHANICAL SPECIFICATIONS AND FEATURES

### RANGE

The Chiller has many available sizes from 13 to 115 tons and available with R-407C or R-410a refrigerant.

### HERMETIC SCROLL COMPRESSOR

- Hermetic Scroll operating at 3500 RPM (60Hz)
- Proven high efficiency low noise and high reliability compressor design to ensure long life operation
- No-contact scroll design and 100% motor cooled by suction gas
- With internal line break motor protection or solid state motor protection
- Minimum two compressors with two to four steps unloading

### BPHE EVAPORATOR

The compact Brazed Plate Exchanger (BPHE) acts as an evaporator; a secondary gas or liquid is cooled as it loses heat to the liquid refrigerant. The refrigerant boils and is converted into gas, absorbing more energy.

BPHE evaporator provides a good, stable boiling process and a small temperature difference between the refrigerant and the secondary fluid. A low temperature difference means that a higher evaporation temperature is possible, which reduces the pressure difference in the system and increases the density of the refrigerant gas. These two factors increase the refrigeration capacity and reduce the power consumption of the compressor, which together increase the total system efficiency.

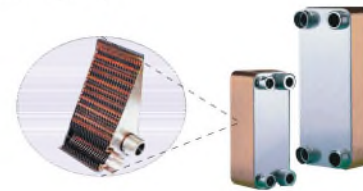
BPHEs are so far the most efficient way of transferring heat for cooling capacities below 50 RT, and with maximum independent twin refrigerant circuits. BPHEs offer considerably better performance and overall economy compared with other traditional heat transfer technologies such as shell and tubes evaporator.

#### Some of the advantages are:

- Compact size and 85-90% lighter by weight and volume than a shell and tube evaporator of the same capacity
- Superior heat transfer performance
- Less refrigerant charge required compare with shell & tubes evaporators
- Little maintenance required. Very little fouling occurs even after long period of operation due to high internal turbulence which creates the self cleaning effect on the internal channels.

#### Caution:

A water strainer should be field installed at the return chilled water inlet pipe, prior to the brazed plate heat exchanger, to prevent entry of any particles larger than 1mm, which could block the internal channels, causing poor performance, increased waterside pressure drop and risk of freezing.



### SHELL & TUBE EVAPORATOR

The adoption of a dedicate, high efficiency exchange tube allowed to exalt performances increasing the cooling capacities by values close to 10%. This performance improvement can be alternatively translated into a raising of the evaporation temperature and then in an optimisation of the COP of the cooling system, not only in combination with R407C but also with the other refrigerants.

- Header tube sheet, shell, refrigerant and water connections are made of carbon steel
- High efficiency exchange tubes are in copper, internally finned.
- Baffles are made of brass or other suitable material (carbon steel)
- The bolt system is made of steel alloys or stainless steel depending on working conditions and temperatures, while gaskets are made of an asbestos free compound.



### CONDENSER COIL

- Constructed from staggered rows of inner ridged copper tubes mechanically expanded into die-formed aluminium fins for positive bonding and efficient heat rejection
- The pre-coated Aluminium fins improve corrosion resistance and maintain the fins surface for efficient heat rejection
- The condenser coil is pressure tested up to 450psig with dry nitrogen under water for leaks
- Optional copper fins condenser coil

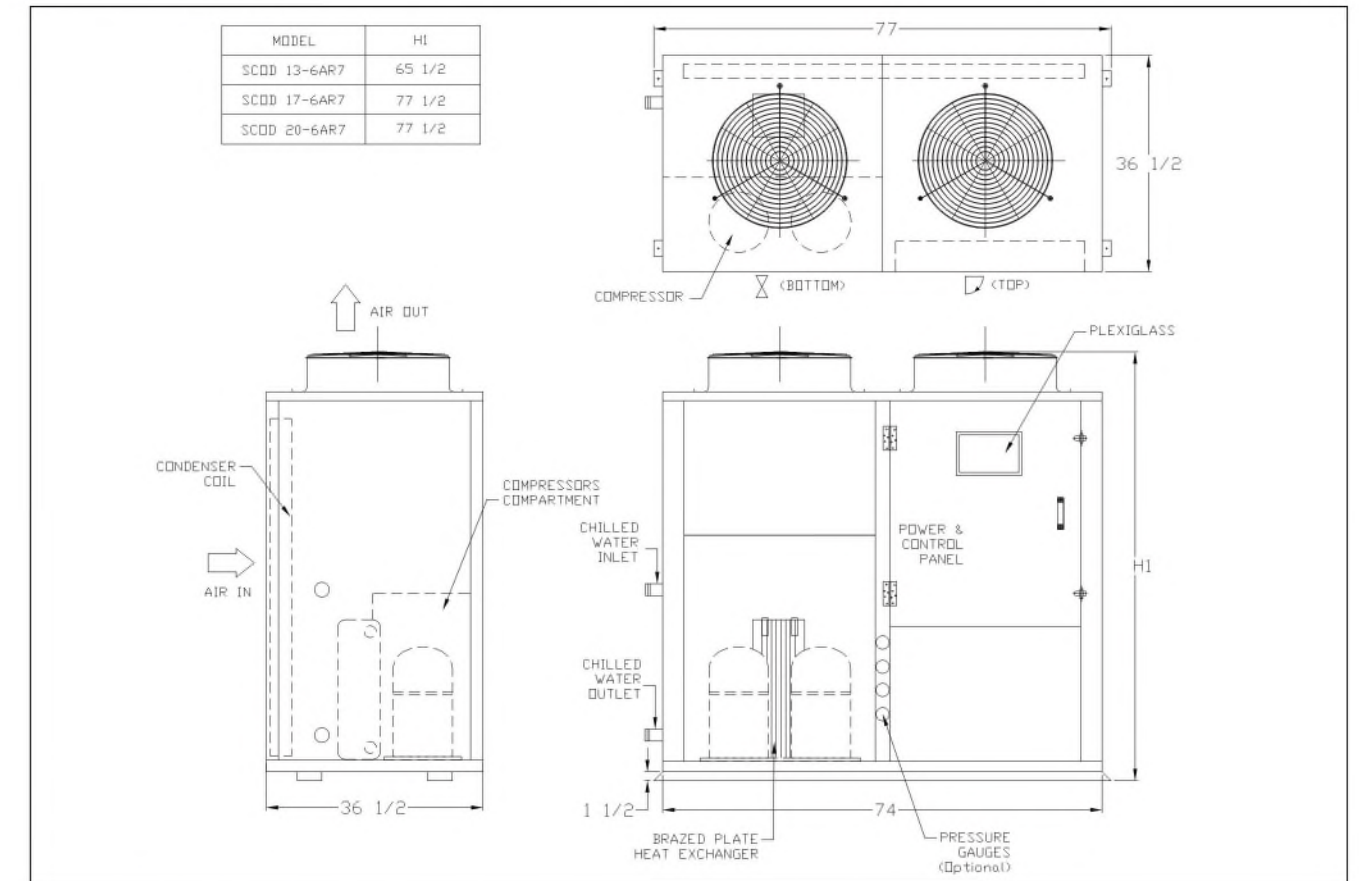


### AXIAL PROPELLER FANS

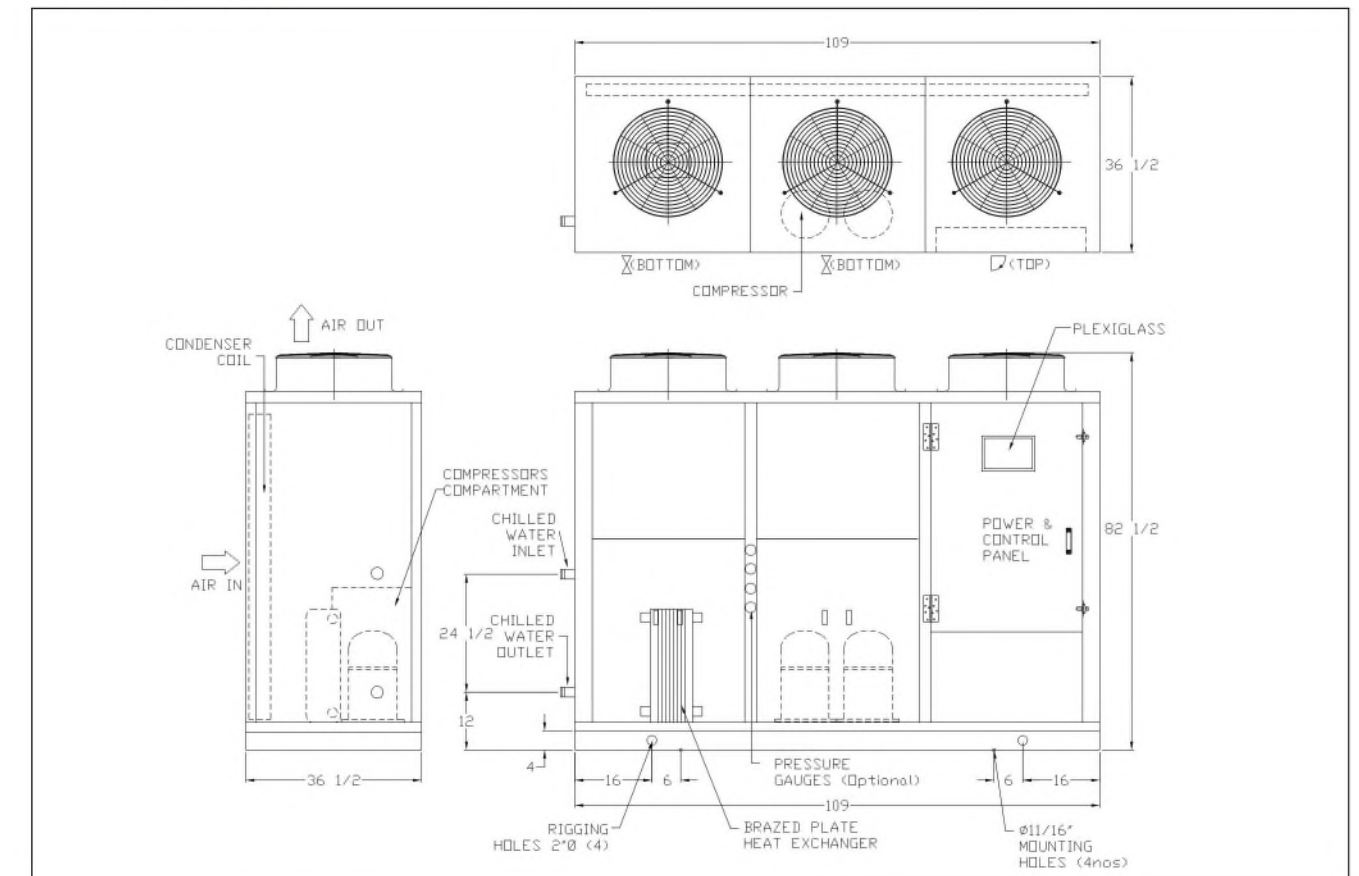
- The patented and unique designed axial propellers are selected to deliver high condenser air flow rates, with noise level and low motor power consumption
- The 3-phase, high starting torque, direct drive condenser fan motor run at maximum speed of 1140 rpm for low noise operation
- All condenser fan motors are provided with either internal line break motor protection or external mounted overload protector; and suitable for outdoor installations with minimum IP54 protection
- Optional variable fan speed control or fan cycling in response to condensing head pressure, during low ambient condition

## DIMENSION DATA

### SCOD 13-6, 17-6, 20-6



### SCOD 23-6, 25-6, 30-6



#### Note:

- 1) All dimensions are in inches.
- 2) No tandem and shell & tubes options available.



MODEL SCOD		13-6 AR7	17-6 AR7	20-6 AR7	23-6 AR7	25-6 AR7	30-6 AR7	35-6 AR7	40-6 AR7
Nominal Capacity	Ton	12.4	16.7	19.5	22.3	24.4	28.8	33.1	38.2
COMPRESSOR									
TYPE (QTY)		Single (2)	Single (2)	Single (2)	Single (2)	Single (2)	Single (2)	Tandem (2)	Tandem (2)
% CAPACITY STEPS		100,50	100,50	100,50	100,50	100,50	100,75,50,25	100,75,50,25	100,75,50,25
NO. OF REFRIGERANT CIRCUITS		2	2	2	2	2	2	2	2
EVAPORATOR									
MODEL -BRAZED PLATE HEAT EXCHANGER		BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8
WATER CONNECTOR	INCH [MM]	1 1/2 [38.1]	1 1/2 [38.1]	2 [50.8]	2 [50.8]	2 [50.8]	2 1/2 [63.5]	2 1/2 [63.5]	3 [76.2]
NOM. WATER FLOW / P.D.	GPM / FT WG	29.8 / 7.6	40.1 / 8.7	46.8 / 9.6	53.5 / 11.0	58.6 / 11.7	69.1 / 11.4	79.4 / 12.5	91.7 / 13.5
CONDENSER									
COIL FPI / TOTAL FA, FT2		14 / 23.5	12 / 28.9	12 / 28.9	14 / 44.4	14 / 45.8	14 / 45.8	14 / 77.0	14 / 89.8
TOTAL CFM		12,300	19,200	18,300	29,600	29,100	27,600	35,800	37,000
No. OF FAN		2	2	2	3	3	3	4	4
FAN DIA	INCH [MM]	26 [660]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]
MOTOR INPUT KW (QTY)		0.75 (2)	1.50 (2)	1.50 (2)	1.50 (3)	1.50 (3)	1.50 (3)	1.50 (4)	1.50 (4)
ELECTRICAL									
NOM. VOLTAGE		460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60
Unit RLA		26.0	34.8	39.4	46.8	51.8	62.6	69.6	78.8
Unit Min. Circuit Current		29	38	43	51	57	69	73	83
Unit Max. Fuse Size		40	50	63	63	75	80	100	100
GENERAL									
UNIT LENGTH	INCH [MM]	77 [1956]	77 [1956]	77 [1956]	109 [2769]	109 [2769]	109 [2769]	94 [2388]	94 [2388]
UNIT WIDTH	INCH [MM]	36% [927]	36% [927]	36% [927]	36% [927]	36% [927]	36% [927]	88 [2235]	88 [2235]
UNIT HEIGHT	INCH [MM]	65% [1664]	77% [1969]	77% [1969]	82% [2096]	82% [2096]	82% [2096]	88 [2235]	88 [2235]
SHIPPING WEIGHT	LBS [KG]	1890 [859]	2000 [909]	2150 [977]	3200 [1455]	3350 [1523]	3450 [1568]	3750 [1705]	3950 [1795]
OPERATING WEIGHT	LBS [KG]	2050 [932]	2150 [977]	2350 [1068]	3400 [1545]	3500 [1591]	3650 [1659]	3950 [1795]	4150 [1886]
CHARGE R407C	LBS [KG]	29 [13]	37 [17]	44 [20]	51 [23]	55 [25]	66 [30]	77 [35]	88 [40]
STRAINER P.D.	FT.WG	10	10	10	10	10	10	10	10

MODEL SCOD		45-6 AR7	50-6 AR7	60-6 AR7	66-6 AR7	72-6 AR7	85-6 AR7	90-6 AR7	96-6 AR7	115-6 AR7
Nominal Capacity	Ton	42.8	46.3	55.8	65.1	69.6	83.2	89.0	93.4	110.6
COMPRESSOR										
TYPE (QTY)		Tandem (2)	Tandem (2)	Tandem (3)	Tandem (3)	Tandem (3)	Tandem (3)	Tandem (4)	Tandem (4)	Tandem (4)
% CAPACITY STEPS		100,75,50,25	100,75,50,25	100,75,50,25	100,86,66,33	100,86,66,33	100,86,66,33	100,75,50,25	100,75,50,25	100,75,50,25
NO. OF REFRIGERANT CIRCUITS		2	2	2	3	3	3	4	4	4
EVAPORATOR										
MODEL -BRAZED PLATE HEAT EXCHANGER		BP9	BP10	BP11	BP12	BP13	BP14	BP15	(2) BP10	(2) BP11
WATER CONNECTOR	INCH [MM]	3 [76.2]	3 [76.2]	3 [76.2]	3 [76.2]	4 [102]	4 [102]	4 [102]	4 [102]	4 [102]
NOM. WATER FLOW / P.D.	GPM / FT WG	102.7 / 14.7	111.1 / 16.3	133.9 / 17.9	156.2 / 11.7	167 / 12.5	199.7 / 12.4	213.6 / 15.8	224.2 / 16.3	265.4 / 17.9
CONDENSER										
MODEL - SHELL & TUBE		-	-	-	ST1	ST2	ST3	ST4	ST4	ST5
WATER CONNECTOR	INCH [MM]	-	-	-	4 [102]	4 [102]	5 [127]	5 [127]	5 [127]	5 [127]
NOM. WATER FLOW / P.D.	GPM / FT WG	-	-	-	156.5 / 12.6	170.0 / 8.5	200.0 / 12.7	214.4 / 9.7	225.0 / 10.6	266.4 / 10.8
CONDENSER										
COIL FPI / TOTAL FA, FT2		13 / 89.8	13 / 85.6	14 / 89.8	16 / 96.3	16 / 102.7	16 / 109.1	16 / 68.4 16 / 68.4	16 / 136.9	16 / 145.4
TOTAL CFM		39,600	38,000	37,400	55,200	54,000	54,000	74,000	73,600	72,000
No. OF FAN		4	4	4	6	6	6	8	8	8
FAN DIA	INCH [MM]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]	30 [760]
MOTOR INPUT KW (QTY)		1.50 (4)	1.50 (4)	1.50 (4)	1.50 (6)	1.50 (6)	1.50 (6)	1.50 (8)	1.50 (8)	1.50 (8)
ELECTRICAL										
NOM. VOLTAGE		460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60
Unit RLA		86.4	96.4	118.0	129.6	144.6	177.0	182.8	192.8	236.0
Unit Min. Circuit Current		91	102	124	134	150	183	187	198	242
Unit Max. Fuse Size		125	125	150	175	200	225	250	250	320
GENERAL										
UNIT LENGTH	INCH [MM]	102 [2591]	102 [2591]	102 [2591]	143 [3632]	143 [3632]	143 [3632]	188 [4775]	188 [4775]	188 [4775]
UNIT WIDTH	INCH [MM]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]
UNIT HEIGHT	INCH [MM]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]	88 [2235]
SHIPPING WEIGHT	LBS [KG]	4100 [1864]	4300 [1955]	4300 [1955]	5153 [2342]	5327 [2421]	5327 [2421]	8600 [3909]	9000 [4090]	9000 [4090]
OPERATING WEIGHT	LBS [KG]	4300 [1955]	4500 [2045]	4500 [2045]	5333 [2424]	5513 [2506]	5513 [2506]	9000 [4090]	9400 [4273]	9400 [4273]
CHARGE R407C	LBS [KG]	99 [45]	106 [48]	123 [56]	145 [66]	158 [72]	187 [85]	198 [90]	211 [96]	242 [110]
STRAINER P.D.	FT.WG	10	10	10	10	10	10	10	10	10

All units are available with single compressor per circuit option (no tandems) and shell & tube evaporator(s) in lieu of brazed plate heat exchangers

POWER AND CONTROL PANEL

Each chiller is packaged with a power and control panel which is ready to accept rated 3 phase 60Hz electrical supply from a remote mounted isolator.

The power panel is furnished with factory pre-wired and mounted DOL starters for compressors, DOL starters for condenser fan motors. MCBs for compressors and fan motors, external overload protectors for compressors and/or fan motors. Power, alarm and compressor run lights to indicate unit operation status.

The Heart of the control panel is the highly reliable Smart-Advance Sa600 microprocessor based controller with advance compressor management logic for scroll compressors in response to required chilled water inlet set-point temperature.

The Smart-Advance SA600 controller provides the following safety-protection controls and features:-

- A 4-digits LED display with 18 icons offers a clear readability with dedicated units of measures for each value displayed
  - Monitors in/out temperature, high/low refrigerant
  - High discharge pressure cut-out protection
  - Low suction pressure cut-out protection
  - Chilled water anti-freeze protection
  - Staggered starting of compressors to reduce current in-rush
  - To prevent compressors short cycling (on and off repeatedly) which can cause overheating of compressors and premature failures or burnt-out of compressors
  - Lead-lag control of compressors operation and auto-balancing of compressors run-hours
  - Large historical alarms memory
  - Equipped with TTL serial connection which enables easy integration with plant supervision, monitoring and management systems through MODBUS communication protocol
- Can be furnished with optional RS485 to form LAN with suitable adaptor for local/remote plant management



Smart Advance 2

The SMART Advance 2 is a rugged microprocessor based controller designed specifically for the hostile environment of the HVAC/R industry. It is designed with the most critical process and has customers in mind. The SMART Advance 2 provides flexibility with set points and control options that can be selected prior to commissioning a system or when the unit is live and functioning. Displays, alarms and other interfaces are accomplished in a clear and simple language that informs the user as to the status of the controller.

The SMART Advance 2 consists of a master micro controller along with a keypad and display. Complementing the SMART Advance 2 micro controller are a variety of expansion boards that allow for system expansion to a maximum of 48 inputs and 48 outputs. Communication to these units occur at 38,400 baud over the I/O port which is dedicated for this purpose.

Two other communication ports (RS-485 and Ethernet) are available on the SMART Advance 2. The RS-485 port allows the user to interactively communicate with the SMART Advance 2 via a Windows based connection software or, for monitoring purposes only, to a BMS (Building Management System) running Modbus RTU or Johnson N2. The Ethernet port allows the user to interactively communicate with the SMART Advance 2 via a Windows based connection software or, for monitoring purposes only, to a BMS running BACnet IP or Modbus IP. For LonTalk or BACnet MSTP communication, an external adapter is required.

A complete software support package is available for your PC allowing for system configuration, dynamic on-line display screens, remote communication, graphing and more.



OTHERS SAFETY CONTROLS

COMPRESSOR MOTOR PROTECTION

Each compressor is either protected with internal line break protection device against high motor winding temperature; or solid state motor protection (mounted inside compressor terminal box) to protect against high motor winding temperature.

CONDENSER FAN MOTOR PROTECTION

Each condenser fan motor is either provided with build-in thermal protector or external mounted thermal overload relay.

OPTIONAL ACCESSORIES

UNDER VOLTAGE AND PHASE PROTECTION RELAY

It protects against low incoming voltage conditions as well as single phase unbalance by opening the control circuit.

HEAT RECOVERY / DESUPERHEATERS

This can be factory supplied and installed to get free hot water up to as high as 55°C.

OTHER OPTIONAL ACCESSORIES

- Coated or uncoated copper fins coils in lieu of pre-coated aluminium fins coils.
- Suction and discharge pressure gauges.
- Discharge or suction stop valves for each compressor.
- Water flow switch to be shipped loose.
- Spring isolators to be shipped loose.
- Rubber-in-shear isolators to be shipped loose.
- Remote keyboard (up to 100m)
- OSHA Approved Condenser Handrail assembly with optional Ladder & Cage



INTEGRATED PUMP TANK STATION

Process pump package can be integrated with or without a tank station. These tanks are offered in all 304SS material and fully insulated with high-quality foam insulation. Pumps are available up to 25HP and in other constructions up to 60HP with 304SS material. This section will be integral to the chiller skid and within a framed enclosure with rain shield.

PERFORMANCE TABLE



Lvg Water Temp. °F	MODEL SCOD	Ambient Temp. °F							
		85.0		95.0		105.0		115.0	
		Ton	KWi	Ton	KWi	Ton	KWi	Ton	KWi
40	13-6 AR7	11.9	12.5	11.3	14.0	10.7	15.7	9.9	17.7
	17-6 AR7	16.4	15.8	15.3	17.9	14.4	20.0	13.3	22.4
	20-6 AR7	19.1	19.2	18.0	21.4	16.9	24.1	15.5	26.8
	23-6 AR7	20.8	20.9	19.4	23.4	18.2	26.2	16.7	29.4
	25-6 AR7	23.9	23.0	22.4	26.0	21.0	29.1	19.6	32.8
	30-6 AR7	28.8	28.0	27.2	31.5	25.5	35.4	23.6	39.7
	35-6 AR7	33.3	31.5	31.2	35.3	29.2	39.7	27.2	44.4
	40-6 AR7	38.4	37.3	36.1	41.8	33.7	47.0	31.5	52.5
	45-6 AR7	41.7	41.9	40.3	46.8	36.6	52.4	34.0	58.7
	50-6 AR7	46.1	46.0	43.6	51.8	40.9	58.2	37.9	65.5
	60-6 AR7	55.6	56.8	52.5	64.0	49.3	72.0	45.6	80.9
	66-6 AR7	63.8	63.6	60.0	71.1	56.1	79.6	51.8	89.2
	72-6 AR7	67.9	69.0	64.2	77.7	60.0	87.3	55.8	98.2
	85-6 AR7	81.2	84.4	76.7	95.0	71.8	106.8	66.7	120.1
	90-6 AR7	88.5	88.4	83.7	99.2	78.4	111.2	72.7	125.0
96-6 AR7	93.0	93.2	87.9	104.8	82.5	117.7	76.5	132.6	
115-6 AR7	110.1	112.2	104.1	126.2	97.6	141.7	90.6	159.6	
42	13-6 AR7	12.5	9.5	11.9	14.0	11.3	15.7	10.4	17.7
	17-6 AR7	17.0	12.9	16.1	17.9	14.8	20.0	13.9	22.4
	20-6 AR7	20.0	14.4	18.8	21.4	17.5	24.1	16.3	26.8
	23-6 AR7	21.6	16.5	20.5	23.4	19.0	26.2	17.6	29.4
	25-6 AR7	24.7	21.8	23.3	26.0	21.9	29.1	20.5	32.8
	30-6 AR7	30.2	24.1	28.3	31.5	26.4	35.4	24.6	39.7
	35-6 AR7	34.7	28.5	31.9	35.3	30.6	39.7	28.4	44.4
	40-6 AR7	40.0	30.8	36.8	41.8	35.3	47.0	32.7	52.5
	45-6 AR7	43.6	33.1	42.0	46.8	38.2	52.4	35.5	58.7
	50-6 AR7	48.0	42.9	45.5	51.8	42.5	58.2	39.7	65.5
	60-6 AR7	57.9	40.9	54.8	64.0	51.2	72.0	47.8	80.9
	66-6 AR7	66.3	49.0	62.5	71.1	58.4	79.6	53.9	89.2
	72-6 AR7	70.5	64.3	66.8	77.7	62.7	87.3	58.4	98.2
	85-6 AR7	84.3	62.1	79.8	95.0	74.9	106.8	69.8	120.1
	90-6 AR7	92.4	75.3	87.4	99.2	81.8	111.2	75.8	125.0
96-6 AR7	96.7	84.8	91.8	104.8	85.7	117.7	80.1	132.6	
115-6 AR7	114.6	83.2	108.7	126.2	101.5	141.7	94.9	159.6	
44	13-6 AR7	13.1	12.5	12.4	14.0	11.8	15.7	10.9	17.7
	17-6 AR7	17.6	15.8	16.7	17.9	15.4	20.0	14.5	22.4
	20-6 AR7	20.7	19.2	19.5	21.4	18.3	24.1	17.0	26.8
	23-6 AR7	23.1	20.9	22.3	23.4	19.9	26.2	18.2	29.4
	25-6 AR7	25.7	23.0	24.4	26.0	22.8	29.1	21.2	32.8
	30-6 AR7	31.4	28.0	28.8	31.5	27.6	35.4	25.8	39.7
	35-6 AR7	36.1	31.5	33.1	35.3	31.7	39.7	29.5	44.4
	40-6 AR7	41.8	37.3	38.2	41.8	36.7	47.0	34.1	52.5
	45-6 AR7	44.3	41.9	42.8	46.8	38.9	52.4	36.1	58.7
	50-6 AR7	49.9	46.0	46.3	51.8	44.5	58.2	41.2	65.5
	60-6 AR7	60.2	56.8	55.8	64.0	53.6	71.9	49.6	80.9
	66-6 AR7	69.1	63.6	65.1	71.1	60.8	79.6	56.2	89.2
	72-6 AR7	73.3	69.0	69.6	77.7	65.3	87.3	60.6	98.2
	85-6 AR7	87.7	84.4	83.2	95.0	78.0	106.8	72.5	120.1
	90-6 AR7	94.0	88.4	89.0	99.2	83.3	111.2	77.2	125.0
96-6 AR7	100.6	93.2	93.4	104.8	89.8	117.7	83.1	132.6	
115-6 AR7	119.1	112.2	110.6	126.2	106.3	141.7	98.4	159.6	

PERFORMANCE TABLE



Lvg Water Temp. °F	MODEL SCOD	Ambient Temp. °F							
		85.0		95.0		105.0		115.0	
		Ton	KWi	Ton	KWi	Ton	KWi	Ton	KWi
46	13-6 AR7	13.6	12.5	12.9	14.0	12.3	15.7	11.3	17.7
	17-6 AR7	18.4	15.8	17.3	17.9	16.2	20.0	15.0	22.4
	20-6 AR7	21.5	17.4	20.2	21.4	19.0	24.1	17.7	26.8
	23-6 AR7	23.3	20.9	22.6	23.4	20.6	26.2	19.0	29.4
	25-6 AR7	26.7	22.8	25.4	26.0	23.9	29.1	22.1	32.8
	30-6 AR7	32.5	28.0	30.8	31.5	28.6	35.4	26.7	39.7
	35-6 AR7	37.5	31.5	35.2	35.3	33.1	39.7	31.0	44.4
	40-6 AR7	43.4	37.3	40.7	41.8	38.2	47.0	35.7	52.5
	45-6 AR7	47.2	41.9	45.5	46.8	41.4	52.4	38.4	58.7
	50-6 AR7	51.8	46.0	49.2	51.8	46.1	58.2	42.9	65.5
	60-6 AR7	62.5	56.8	59.3	64.0	55.6	72.0	51.7	80.9
	66-6 AR7	71.7	63.6	67.6	71.1	63.1	79.6	58.4	89.2
	72-6 AR7	76.2	69.0	72.3	77.7	67.9	87.3	63.1	98.2
	85-6 AR7	91.1	84.4	86.5	95.0	81.2	106.8	75.4	120.1
	90-6 AR7	99.8	88.4	94.5	99.2	88.5	111.2	82.0	125.0
96-6 AR7	104.6	93.2	99.2	104.8	93.0	117.7	86.5	132.6	
115-6 AR7	123.9	112.2	117.4	126.2	110.1	141.7	102.4	159.6	
48	13-6 AR7	14.2	12.5	13.5	14.0	12.9	15.7	11.8	17.7
	17-6 AR7	19.1	15.8	18.1	17.9	16.9	20.0	15.8	22.4
	20-6 AR7	22.4	17.4	21.1	21.4	19.7	24.1	18.4	26.8
	23-6 AR7	24.4	20.9	23.0	23.4	21.5	26.2	20.0	29.4
	25-6 AR7	27.7	22.8	26.3	26.0	24.7	29.1	23.0	32.8
	30-6 AR7	33.9	28.0	32.0	31.5	29.9	35.4	27.8	39.7
	35-6 AR7	39.0	31.5	36.7	35.3	34.3	39.7	32.0	44.4
	40-6 AR7	45.0	37.3	42.5	41.8	39.7	47.0	36.9	52.5
	45-6 AR7	48.9	41.9	47.2	46.8	42.9	52.4	39.8	58.7
	50-6 AR7	53.9	46.0	51.0	51.8	48.0	58.2	44.8	65.5
	60-6 AR7	65.0	56.8	61.5	64.0	57.9	72.0	54.0	80.9
	66-6 AR7	74.4	63.6	70.2	71.1	65.4	79.6	60.6	89.2
	72-6 AR7	79.3	69.0	75.0	77.7	70.5	87.3	65.8	98.2
	85-6 AR7	94.8	84.4	89.7	95.0	84.3	106.8	78.6	120.1
	90-6 AR7	103.7	88.4	98.2	99.2	91.9	111.2	85.1	125.0
96-6 AR7	108.9	93.2	103.0	104.8	96.7	117.7	90.4	132.6	
115-6 AR7	129.0	112.2	122.0	126.2	114.6	141.7	107.0	159.6	
50	13-6 AR7	14.6	12.5	13.9	14.0	13.3	15.7	12.3	17.7
	17-6 AR7	19.7	15.8	18.8	17.9	17.5	20.0	16.4	22.4
	20-6 AR7	23.4	17.4	21.8	21.4	20.7	24.1	19.1	26.8
	23-6 AR7	25.4	20.9	23.8	23.4	22.3	26.2	20.7	29.4
	25-6 AR7	28.9	22.8	27.4	26.0	25.7	29.1	24.0	32.8
	30-6 AR7	35.1	28.0	33.3	31.5	31.2	35.4	28.8	39.7
	35-6 AR7	40.5	31.5	38.3	35.3	35.9	39.7	33.3	44.4
	40-6 AR7	46.8	37.3	44.2	41.8	41.4	47.0	38.4	52.5
	45-6 AR7	50.9	41.9	49.0	46.8	44.6	52.4	41.4	58.7
	50-6 AR7	55.9	46.0	53.0	51.8	49.9	58.2	46.5	65.5
	60-6 AR7	67.4	56.8	63.9	64.0	60.2	72.0	56.0	80.9
	66-6 AR7	77.4	63.6	73.0	71.1	68.1	79.6	63.0	89.2
	72-6 AR7	82.3	69.0	78.1	77.7	73.3	87.3	68.4	98.2
	85-6 AR7	98.4	84.4	93.3	95.0	87.7	106.8	81.8	120.1
	90-6 AR7	107.8	88.4	102.0	99.2	95.6	111.2	88.5	125.0
96-6 AR7	112.8	93.2	107.1	104.8	100.6	117.7	93.8	132.6	
115-6 AR7	133.6	112.2	126.8	126.2	119.1	141.7	111.1	159.6	